567—55.6(455B) Aquifer storage and recovery technical evaluation criteria.

55.6(1) *Requirements.* Injections into aquifers for the purpose of treated water storage and subsequent withdrawals from the receiving aquifers intended for potable uses shall be subject to the following requirements:

a. Aquifer pretesting. Procurement of a limited registration for aquifer pretesting as outlined in subrule 55.5(1). The limited registration shall be for the period of one year and may be renewed for two additional one-year periods, for a total cumulative registration time not to exceed three years at the discretion of the department should the project require more than one year to be completed. The limited registration shall allow initial aquifer testing for determining the feasibility of aquifer storage and recovery, including placement of pumping and storage/extraction equipment. The testing approach shall be designed to provide information as needed to evaluate the ultimate capacity anticipated for the ASR project and provide assurance that the ASR site shall not restrict other uses of the aquifer. The testing program shall include injection rates and schedules, water storage volumes, recovery rates and schedule, and a final testing report.

b. Engineering report. An engineering evaluation of the technical feasibility of the proposed water injection and the probable percentage of recovery of treated water when pumped for recovery shall be submitted to the department. The engineering report shall include preliminary information from conceptual evaluations and aquifer pretesting such as:

(1) Injection rates and schedules,

(2) Water storage volumes,

(3) The length of time the injected water will be stored,

(4) The projected recovery rate,

(5) Water quality data necessary to demonstrate the percentage of recovered water and that the water meets national drinking water standards,

(6) Water level monitoring data including the location of observation wells, if any,

(7) A plan detailing what to do with the recovered water if the intended use is not possible, and

(8) A final testing protocol.

If the report can demonstrate by field test results or by a conceptual or mathematical hydrogeologic modeling that the injection, storage, and subsequent recovery will not adversely affect nearby users, the ASR project may be permitted after review by the department. A displacement zone containing the stored volume of water will not be allowed if it adversely affects another user's zone of influence. If the department finds through hydrogeologic modeling or during pretesting that the proposed displacement zone may impact the zone of influence of another user's existing well, additional testing will be required. The department may require the applicant to construct observation wells between the ASR site and nearby wells and may designate project-specific monitoring and reporting requirements at the observation wells.

c. Hydrogeologic evaluation. Hydrogeologic investigation of the site to evaluate potential quantitative and qualitative impacts to the aquifer, including changes to localized aquifer geochemistry, shall be part of the engineering report. Preliminary hydrogeologic information shall include:

(1) The local geology,

(2) A hydrogeologic flow model of the areal flow patterns,

(3) A description of the aquifer targeted for storage,

(4) Estimated flow direction and rate of movement,

(5) Both permitted and private wells within the area affected by ASR wells, including best estimates of respective zones of influence,

(6) Basis for estimating the displacement zone,

(7) Anticipated changes to the receiving aquifer geochemistry due to the proposed ASR testing and use, and

(8) Potable water quantity recovery estimates.

d. Protection of nearby existing water uses. The aquifer storage and recovery permit applicant shall demonstrate that the ASR site shall not restrict other uses of the aquifer by nearby water use permittees. An ASR applicant shall conduct and submit an inventory of nearby wells. The department, after considering the rate and amount of the ASR injections and withdrawals and the characteristics

of the aquifer, will determine the extent of the inventory and the appropriate radius from the proposed ASR site. The department shall provide a map specifying the area in which the inventory is needed and forms specifying information to be gathered. The ASR permit applicant shall make a good-faith effort in obtaining available information from public records to identify nearby landowners and occupants and from drilling contractors identified by a landowner or occupant who responds to the inventory. The ASR applicant shall immediately notify the department of all objections raised by nearby landowners or other on-site problems such as the structural integrity of the injection equipment. Well interference conflicts arising from the proposed ASR site/project shall be resolved as outlined in 567—Chapter 54 or as otherwise specified by the department. Water recovery from an ASR site will not be permitted to any user other than the ASR permittee.

e. MCL exceedance limitation. No permit shall allow injected water to contain contaminants in excess of the maximum contaminant levels (MCLs) established by the department in 567—Chapters 40 to 43. Chemicals associated with disinfection of the water may be injected into the aquifer up to the standards established under 567—Chapters 40 to 43 or as otherwise specified by the department.

f. Reporting and record keeping. The permittee shall maintain a monthly record of injection and recovery, including the total number of hours of injection and recovery and the total metered quantity injected and recovered. The records must be submitted to the department annually. Project records including water quality testing records must be kept by the applicant for a period of five years. Water quality monitoring shall be at the frequency required by 567—Chapters 40 to 43 and as identified in the water system's public water supply operation permit. The applicant shall keep project records for a period of three years after termination of an ASR project and closure of the recovery wells.

g. Follow-up analysis by permittee. Reserved.

h. Vacating a permit for failure to construct and nonuse. The department may vacate the permit if the applicant fails to construct injection and water pumpage/recovery and ancillary equipment within three years of issuance of the permit (or subsequent permit modifications or renewals). The permit may also be vacated if the applicant does not use the storage system within three years of acquisition of the permit. A site abandonment plan including the physical removal of injection and water recovery equipment and the abandonment of all injection/recovery and observation wells pursuant to 567—Chapter 39 will be required of the applicant if the permit is vacated. A permittee whose permit is vacated may request a formal review of the action. The permittee must submit a request for review in writing to the director within 30 days of the date of notification of the final decision made by the department. A decision by the director in a formal review case may be further appealed to the environmental protection commission (EPC).

i. Mechanical integrity. Other conditions that are necessary to ensure adequate protection of water supplies may be imposed for mechanical integrity checks of the injection and treated water recovery well.

j. Revocation. The department may revoke or modify a permit to prevent or mitigate injury to other water users or otherwise protect aquifer water quality. The department may, based upon valid scientific data, further restrict certain chemicals in the injection source water if the department finds the constituents will interfere with or pose a threat to the maintenance of the water resources of the state for present or future beneficial uses.

k. Nonpotable uses. Reserved.

55.6(2) *Duration of permit, conditions of permit, and applicant property rights.* Permits for aquifer storage and recovery shall be issued for 20 years.

a. Conditions of permit. The permit will specify the maximum allowable injection rate at each well, the maximum allowable annual quantitative storage volume, and the maximum allowable instantaneous water withdrawal rate at each well.

b. Property of permittee. The department shall not authorize withdrawals of treated water from an aquifer storage and recovery site by anyone other than the permittee during the period of the permit and each subsequent renewal permit. Treated water injected into a receiving aquifer (and thereby comprising the "displacement zone") as part of an ASR permit is the property of the permittee. Treated water which is recovered from storage within a displacement zone under terms of a permit shall be referred to as "recovered water" and shall be the property of the permittee. If a permit is revoked or otherwise

surrendered, the ownership of the injected water within the aquifer (the water considered as "property") reverts to the state of Iowa.

c. Restrictions on other wells within displacement zone. Existing wells within the displacement zone shall be plugged pursuant to 567—Chapter 39. No new private water wells, injection/withdrawal wells, observation wells, or public water supply wells shall be permitted by any governmental entity within the ASR displacement zone while the ASR permit is in effect. An ASR permit shall be filed with the appropriate county recorder to give constructive notice to present and future landowners of all conditions or requirements imposed by the final decision on an ASR application, including the well prohibition condition.